



MANUAL

**Automatic Transfer Switch Box (ATS-Box)/
Battery Backup Distribution (BBD)**

for LG Electronics

“LG ESS Home 8, LG ESS Home 10”



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1. Information about these instructions

1.1 Scope

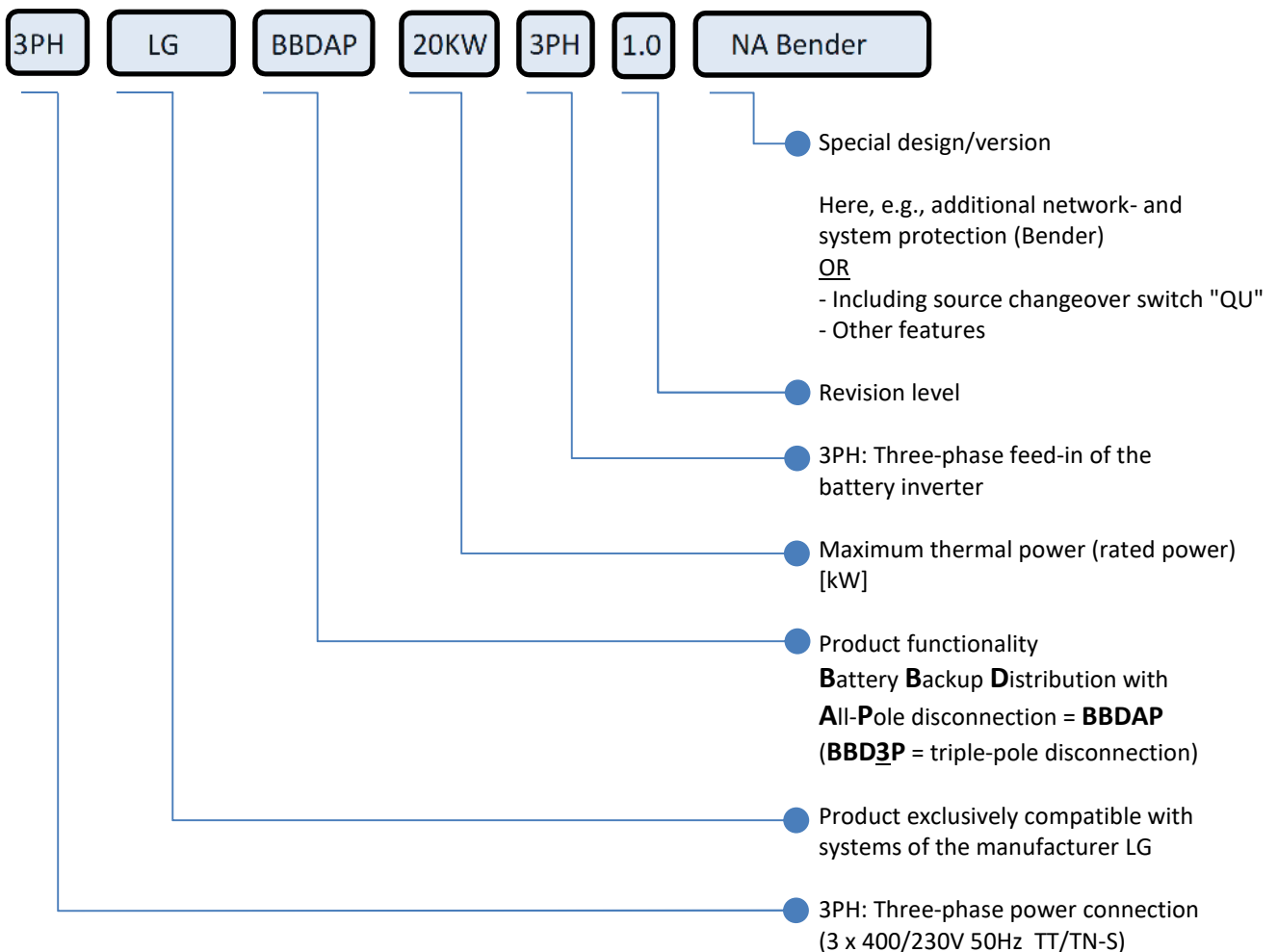
These instructions apply to ATS-Boxes with all-pole and triple-pole disconnection, according to the recommendations of

LG Electronics

Please observe the system accompanying documentation associated with this installation manual, such as

- Technical information
- Operating instructions
- Installation instructions
- <https://www.lg.com/global/business/ess/residential/dc-8-10>

Designations (enwitec electronic - **Matchcode**) for the Automatic transfer switch boxes



1.2 Target group

These instructions are for trained qualified electricians. The activities described in these instructions may only be carried out by trained qualified electricians.

1.3 Symbols used



"Danger" indicates safety advice which, if not observed, will result immediately in death or severe personal injury!



"Warning" indicates safety advice which, if not observed, may result in death or severe personal injury!



"Caution" indicates safety advice which, if not observed, may result in light or medium personal injury!



"Attention" indicates safety advice which, if not observed, may result in material damage!



"Qualified electrician" indicates work that may only be performed by a certified electrician.



"Info" indicates important information!

2. Use and safety

2.1 Proper use

2.1.1 System approvals

The ATS Boxes may only be used in the LG ESS Home 8, LG ESS Home 10. The components used by enwitec-electronic and the electrical wiring are licensed by the manufacturer "LG Electronics".

2.1.2 Country approvals

The ATS-Boxes for the LG ESS Home 8, LG ESS Home 10 can in principle be used in all of the versions listed here in

- Austria
- Germany
- Switzerland

It is up to the network operator to make the important determination as to whether an all-pole or three-pole network disconnection is carried out. This could also require a version with additional network- and system protection ("NA"- protection / "ENS" = version with Bender VMD460 relay). In general, the all-pole disconnection is required for German low-voltage grid operators (VDN directive "emergency power units). In Austria, the future "TAEV" favors the three-pole disconnection, which however may not be used in the TT network.

2.1.3 Versions and decision-making aid

According to the requirements of the grid operator

- All-pole disconnection
- Triple-pole disconnection
- any additional NA protection ("ENS")

enwitec electronic GmbH & Co.KG offers the suitable ATS-Box. Please note that the system installer / fitter is responsible for the correct selection. In case of doubt, it is always advisable to coordinate with the network operator (especially during initial installation). The flow chart on the next page may be useful here!



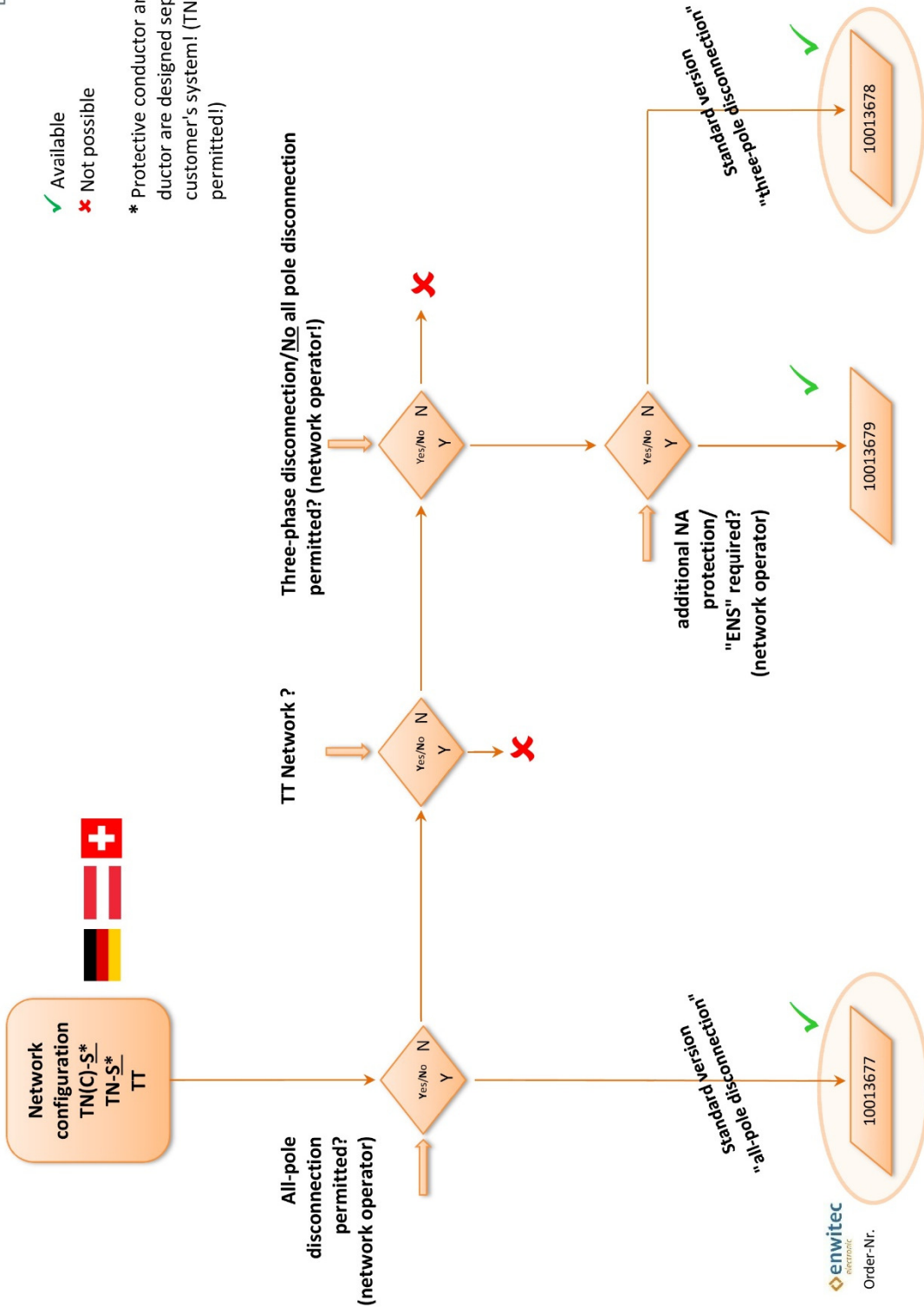
At the time these installation instructions were issued, enwitec electronic GmbH & Co.KG has a claim for additional network- and system protection only from some Austrian network operators!

Decision-making aid - ATS-Boxes 63A for the LG ESS Home 8, LG ESS Home 10



- ✓ Available
- ✗ Not possible

* Protective conductor and neutral conductor are designed separately in the customer's system! (TN-C network is not permitted!)



enwitec
electronic
Order-Nr.

issued on 28.01.2019 - errors excepted

2.1.4 Tasks of the ATS-Box

- Measurement and transmission of the parameters required for energy management by means of the integrated ABB Smart Meter
- Grid disconnection in the event of a power failure / mains failure
- Reconnection when upon network return / network fault rectification
- Establishment of the safety-relevant ground connection in backup power operation
- Separation of the consumer circuits into "normal" consumer loads (without Backup power functionality) and in backed up power loads

The total load of the backed up loads/circuits must not exceed the nominal rating of the LG inverter-type: **LG ESS Home 8, LG ESS Home 10**

2.1.5 Operation of the ATS-Box

Grid operation switchover to backup power operation

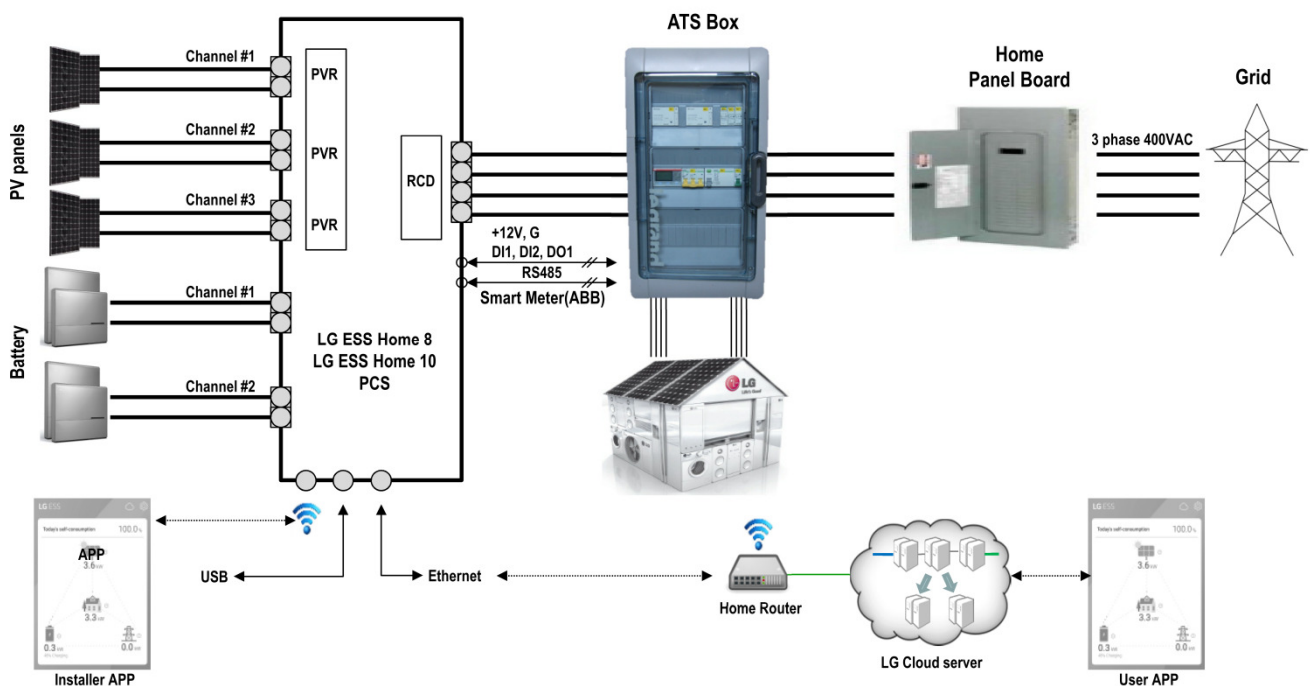
- **Failure or fault of the public grid**
- The mains contactors K1 and K2 deactivate. This deactivation occurs either by means of the direct mains connection or by the Bender "NA"-protection.
- The mains contactors K1 and K2 thus disconnect:
 - the LG ESS Home 8, LG ESS Home 10 and the backup power loads all-pole or triple -pole from the public grid
 - the "normal" consumer loads are not disconnected.
- The LG ESS Home 8, LG ESS Home 10 remains connected to the backup power loads.
- The relay K3* is activated by activation from the LG ESS Home 8, LG ESS Home 10 (12 V DC).
- The contactors K4⁺ and K5⁺ deactivate and connect the neutral conductor from the LG ESS Home 8, LG ESS Home 10 to the protective conductor. This ensures a safe "PEN" connection for backup power operation
- The LG ESS Home 8, LG ESS Home 10 also receives additional information about the Smart Meter and starts its internal procedure for backup power operation.
- After checking all available parameters and additional safety information (feedback messages from K1/K2/K4⁺/K5⁺), the active feed-in from the LG ESS Home 8, LG ESS Home 10 is started after a defined measuring time. Now all backup power loads are supplied with electrical energy.

*The relay K3 is installed for additional safety and prevents activation of the mains and "PEN" contactors (K1/K2/K4⁺/K5⁺) during network return due to its normally closed contact. This means that it is not possible to switch back to grid mode without an additional "agreement" of LG ESS Home 8, LG ESS Home 10, even though a grid already exists or the Bender "NA"- protection has accepted the grid conditions.

⁺ for all-pole disconnection!

Switchover of the backup power operation in grid operation

- ➔ **Return of the public grid**
- ➔ The Smart-Meter measures the mains voltage and transmits this information to the LG ESS Home 8, LG ESS Home 10.
- ➔ After a defined measurement time, the public grid is again considered as "stable."
- ➔ The LG ESS Home 8, LG ESS Home 10 then stops immediately OR only after confirmation (at the latest however when the battery is empty) of its backup power operation and switches its outputs to be voltage-free.
- ➔ The LG ESS Home 8, LG ESS Home 10 deactivates the control of the relay K3 so that
 - the mains contactors K1/K2 are activated almost simultaneously (connection to the public grid is restored on all poles) or the remote signal is released for the Bender "NA"- protection and this activates K1/K2;
 - the "PEN" contactors K4+/K5+ are activated (thus separation of the "PEN" connection of the backup power operation).
- ➔ The "normal" consumer loads as well as the backup power loads and LG ESS Home 8, LG ESS Home 10 are thus again connected to the public grid.
- ➔ The LG ESS Home 8, LG ESS Home 10 on the other hand starts its active feed-in after checking all the normative grid parameters required by standards by using its internal "NA"- protection.



2.1.6 Permissible grid forms (public grid)

All-pole disconnection in the customer's system

<p>TN(C)-<u>S</u></p> <p>TN-<u>S</u></p> <p>TT</p>	}	✓	<p>Grid operator: 4-wire (common PE and N)</p> <p><u>Customer system:</u> 5-wire (disconnected PE and N)</p>
			<p>Grid operator: 5-wire (disconnected PE and N)</p> <p><u>Customer system:</u> 5-wire (disconnected PE and N)</p>
			<p>Grid operator: 4-wire (no PE, only N)</p> <p><u>Customer system:</u> 4-wire (only N, PE has no grid connection; PE only locally)</p>

Triple-pole disconnection in the customer's system

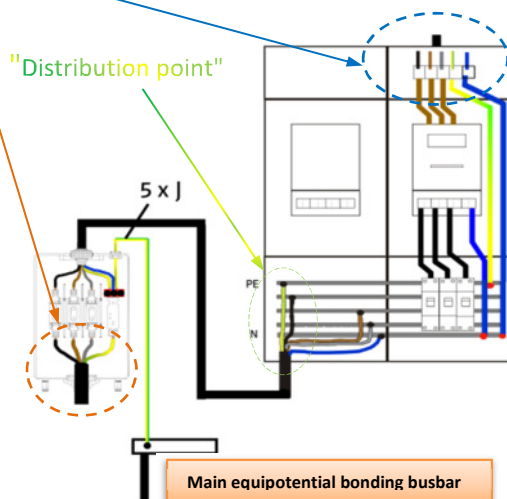
<p>TN(C)-<u>S</u>*</p> <p>TN-<u>S</u></p>	}	✓	<p>Grid operator: 4-wire (common PE and N)</p> <p><u>Customer system:</u> 5-wire (disconnected PE and N)</p>
			<p>Grid operator: 5-wire (disconnected PE and N)</p> <p><u>Customer system:</u> 5-wire (disconnected PE and N)</p>

***Attention:** The triple-pole disconnection in the TN-S customer system with a TN-C network of the grid operator must occur in the immediate vicinity of the PEN conductor distribution point (up to max. 2 meters of wire length is recommended, for example, by "Netz Oberösterreich").

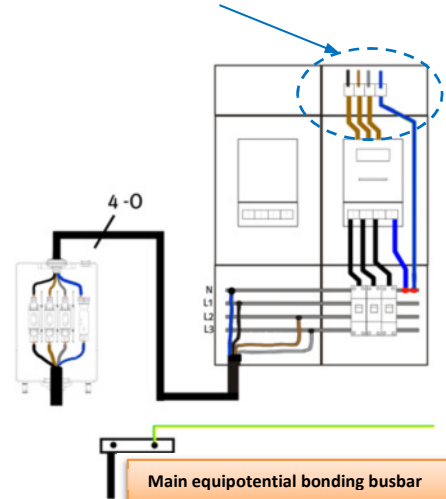
Explanations



TN(C)-S Netz



Only all-pole disconnection
in the **TT** network



2.2 Safety Information



Risk of death from high voltages! The installation and commissioning of the ATS-Box may only be carried out by trained qualified electricians!



The ATS-Box is designed so that

- circuit breakers,
- ground fault circuit interrupters RCD (RCD \triangleq **R**esidual **C**urrent **D**evice);
- the operation of the ABB Smart Meter and
- the operation of the Bender NA protection (no parameterization!)
- the operation of the source changeover switch for the backup power loads

are easy to use. Thus, for example, prescribed checks of the ground fault circuit breaker (test button) can also be carried out by laymen.

In addition, the ABB Smart Meter can be used to read various operating states (by the "layman").

For the LG ESS Home 8, LG ESS Home 10 black start's functionality a 9V-Lithium metal battery is built in. This battery has got a capacity of approximately 10Wh inside and is clarified as "Lithium metal battery contained in equipment" according UN 3091

Class 9 lithium battery hazard label is used according UN 3091:














Please observe the relevant safety data sheet!

With regard to the transport:
With regard to disposal:

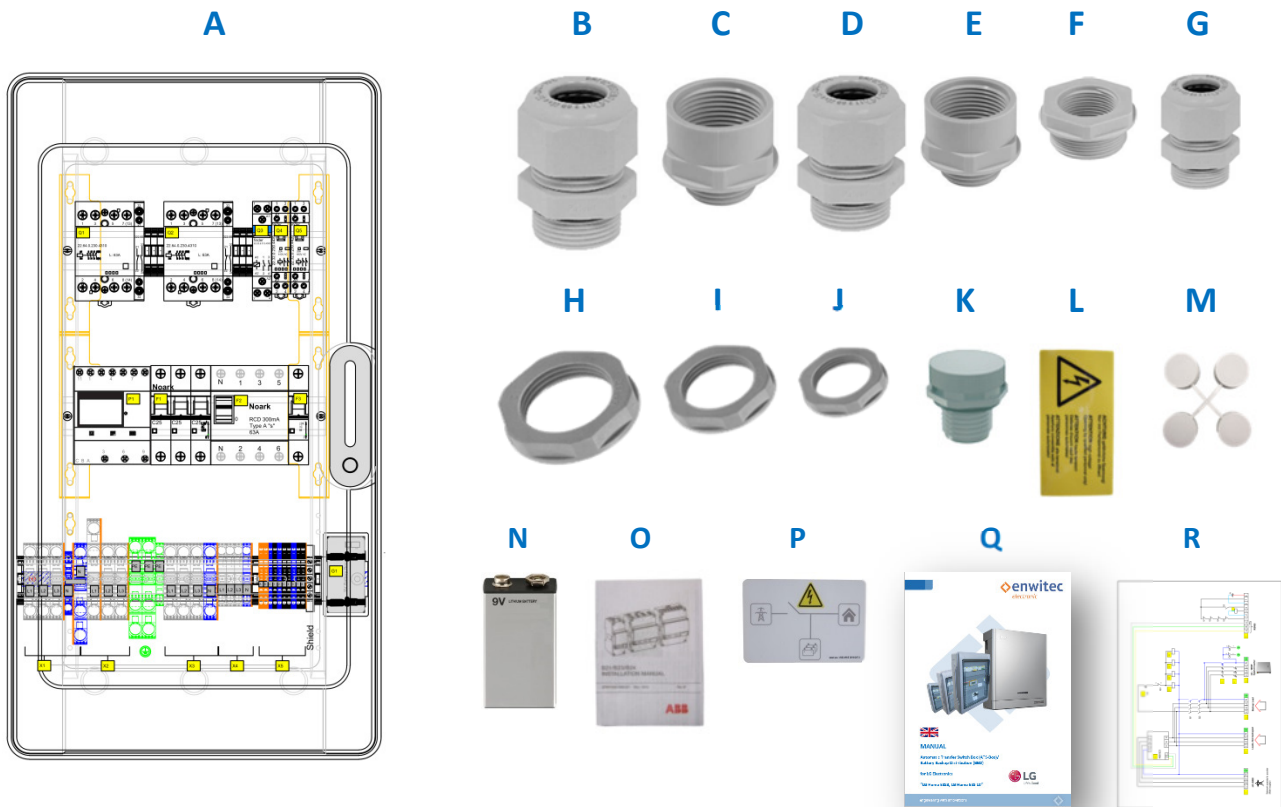
European "ADR" - Packing instruction 970; Section I
European "ADR" - SV 670

2.3 Explanation of the symbols / characteristic values on the nameplate

Symbol	Designation / Meaning
	Do not dispose of the ATS-Box and its components via the household waste!
	Class 9 - Lithium metal battery is inside! Please take note of the European ADR - guideline "SV 670" or any other national regulation with regard to the disposal!
	CE marking The ATS-Box Box meets the requirements of the applicable EC guidelines.
	Class rating II The ATS-Box has a reinforced insulation and is thus protected against direct and indirect contact.
 without symbol	Protective category IP65 The ATS-Box is completely protected against the ingress of dirt and spray water.
 without symbol	Max. ambient temperature (t_a) [°C] The ATS-Box may only be operated up to this max. ambient temperature.
 without symbol	Measurement operating voltage [V] Do not operate the ATS-Box at any other operating voltage!
 without symbol	Rated operating frequency [Hz] Do not operate the ATS-Box at any other operating frequency!
 without symbol	Rated power [kW] The ATS-Box is designed for this throughput power or thermal rated load.
 without symbol	Peak current [A] The ATS-Box may be operated up to this peak current.
 without symbol	IEC/EN – Standard specification The ATS-Box meets IEC/EN61439-1 (DE: VDE 0660-600-1) "low-voltage switching device combinations"

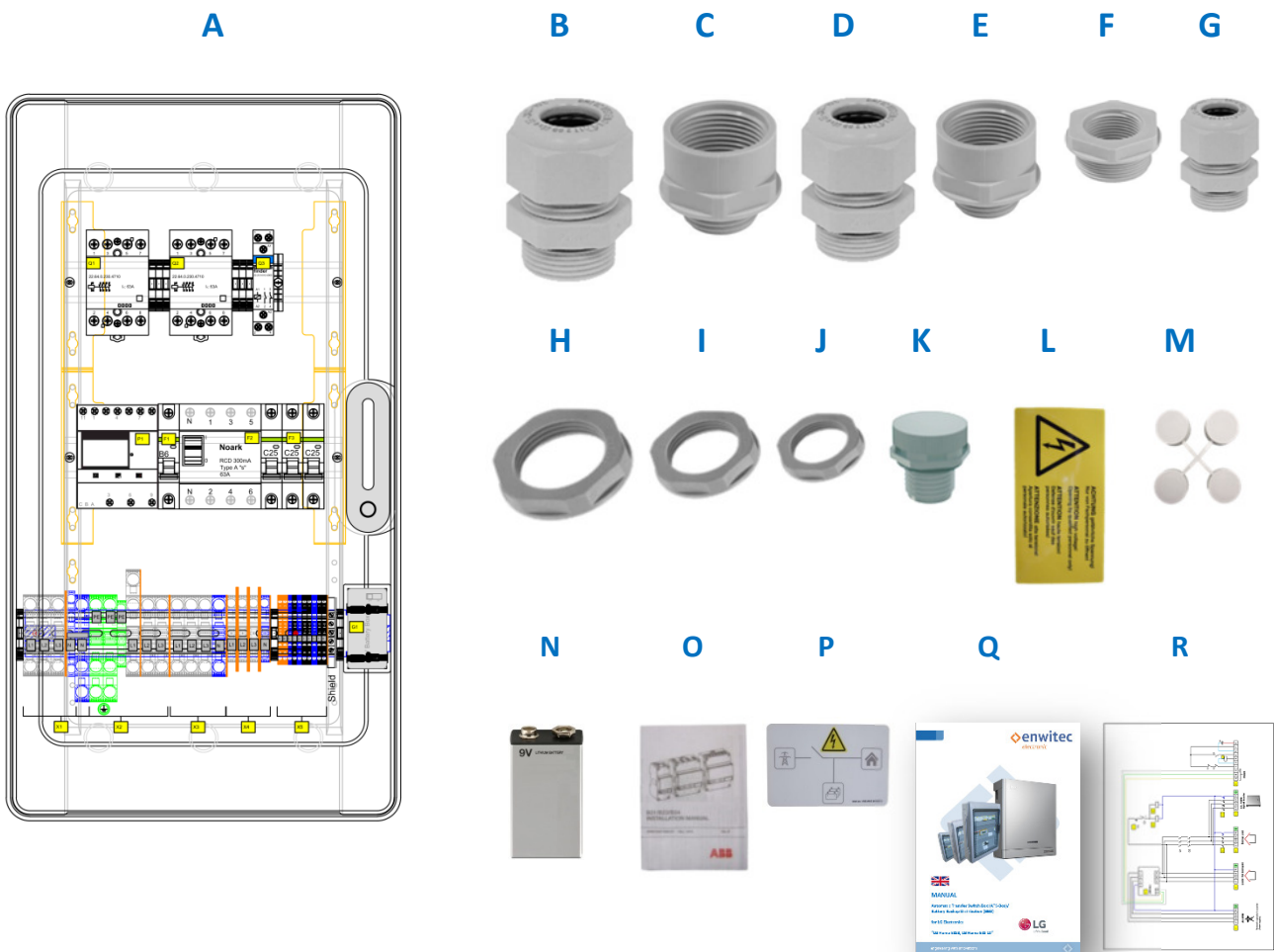
3. Standard package

3.1 Type 10013677 -All-pole; standard



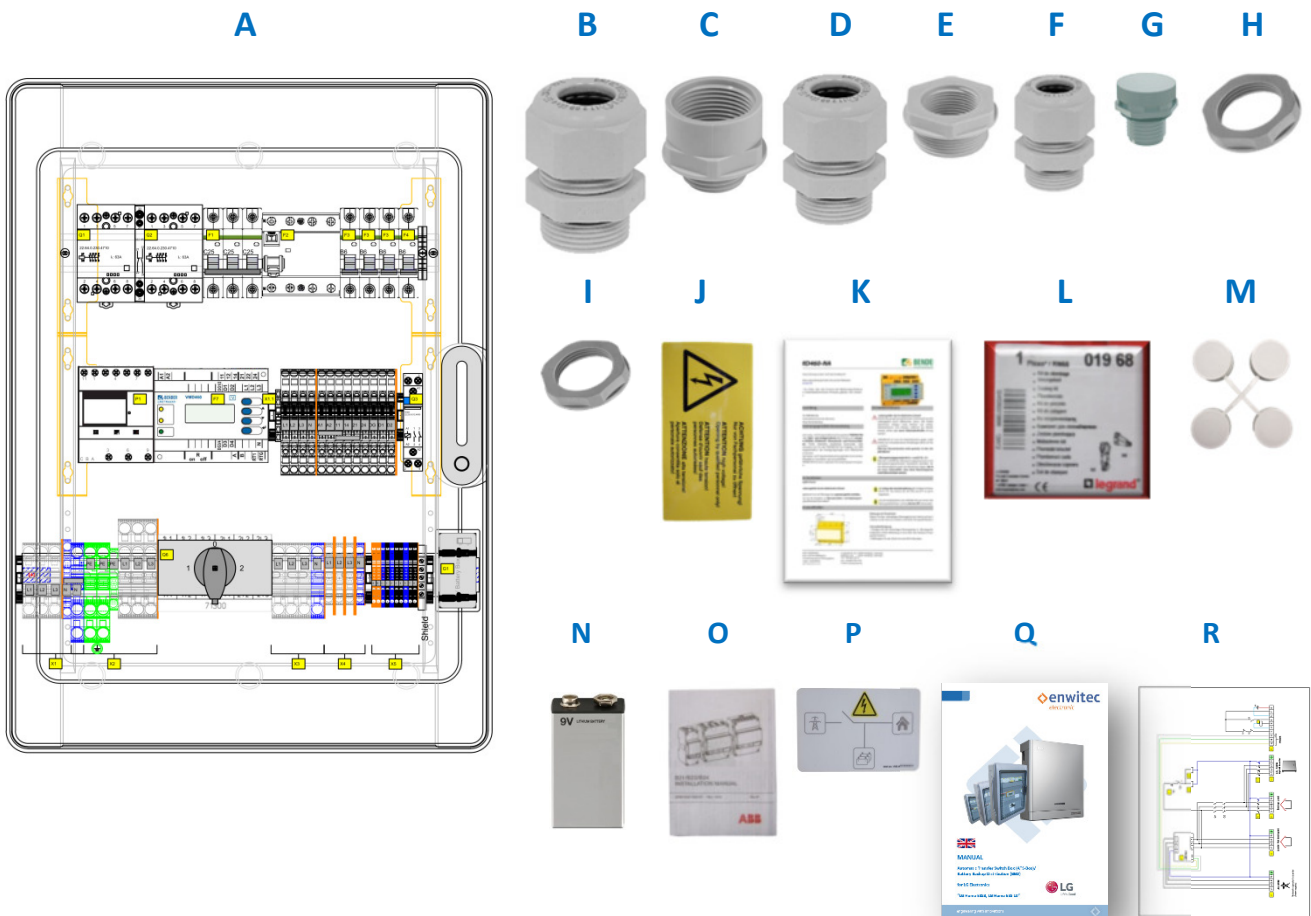
Position	Quantity	Designation
A	1	ATS-Box 10013677
B	2	Cable gland M40 x 1.5 (clamping range \varnothing 16 – 28mm)
C	2	Expansion from M32 to M40
D	4	Cable gland M32 x 1.5 (clamping range \varnothing 13 – 21mm)
E	2	Expansion from M25 to M32
F	1	Reduction from M20 to M12 (for pressure equalizing valve)
G	3	Cable gland M20 x 1.5 (clamping range \varnothing 6 – 13mm)
H	2	Counter nut M32
I	2	Counter nut M25
J	4	Counter nut M20
K	1	Pressure compensation element
L	1	"Dangerous voltage" warning label
M	4	Cover caps for fastening screws
N	1	Lithium Manganese Dioxide 9V battery (in battery case)
O	1	Operating instructions for ABB Smart Meter
P	1	Sticker - Indicating an island operating storage system
Q	1	Manual Nr. 10013830 (= this manual)
R	1	Circuit diagram for the ATS-Box 10013677 (DIN A3 printout)

3.2 Type 10013678 -Triple-pole; Standard-



Position	Quantity	Designation
A	1	ATS-Box 10013678
B	2	Cable gland M40 x 1.5 (clamping range \varnothing 16 – 28mm)
C	2	Expansion from M32 to M40
D	3	Cable gland M32 x 1.5 (clamping range \varnothing 13 – 21mm)
E	1	Expansion from M25 to M32
F	1	Reduction from M20 to M12 (for pressure equalizing valve)
G	8	Cable gland M20 x 1.5 (clamping range \varnothing 6 – 13mm)
H	2	Counter nut M32
I	1	Counter nut M25
J	9	Counter nut M20
K	1	Pressure compensation element
L	1	"Dangerous voltage" warning label
M	4	Cover caps for fastening screws
N	1	Lithium Manganese Dioxide 9V battery (in battery case)
O	1	Operating instructions for ABB Smart Meter
P	1	Sticker - Indicating an island operating storage system
Q	1	Manual Nr. 10013830 (= this manual)
R	1	Circuit diagram for the ATS-Box 10013678 (DIN A3 printout)

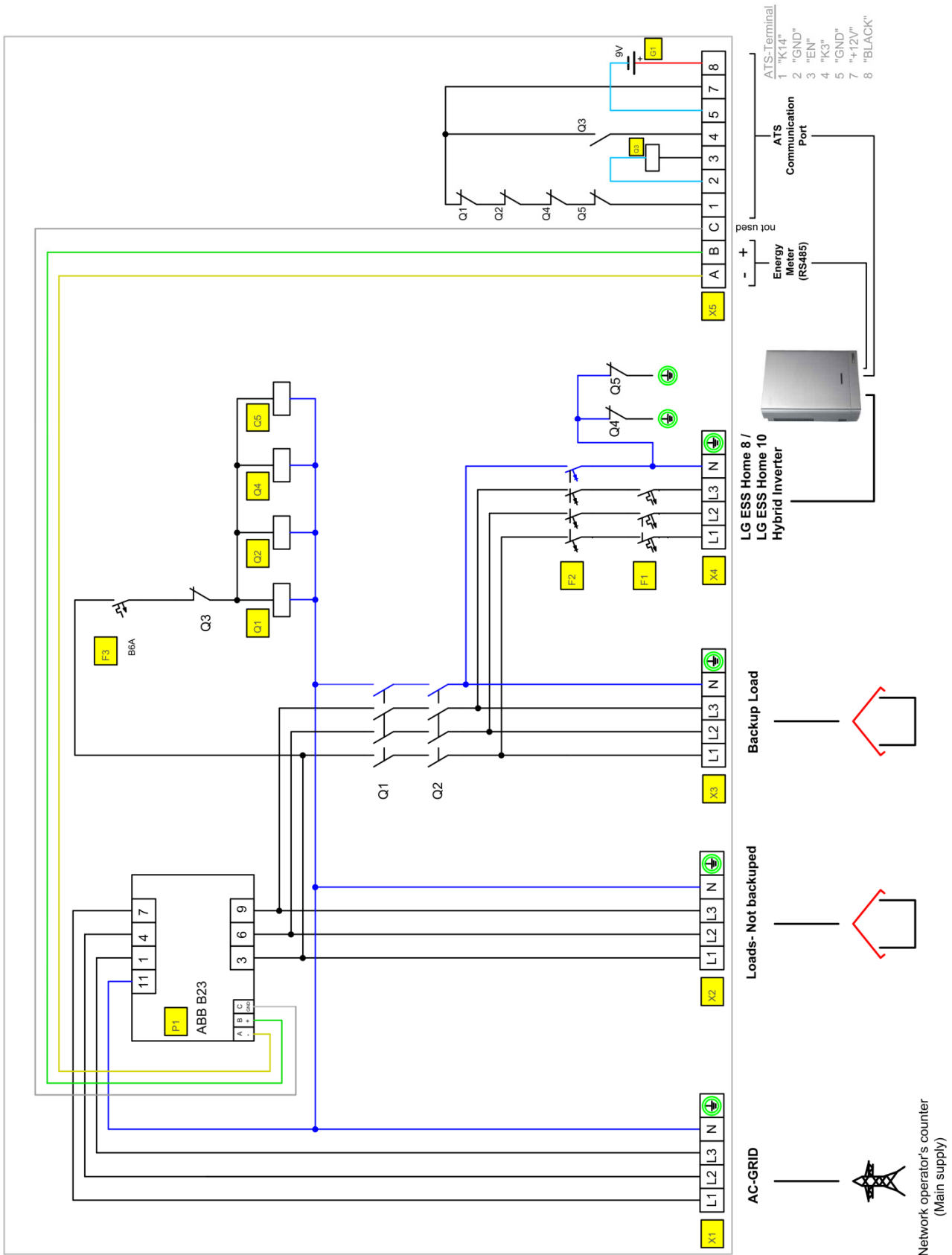
3.3 Type 10013679 -Triple-pole; including "NA"- protection Bender+source changeover switch-



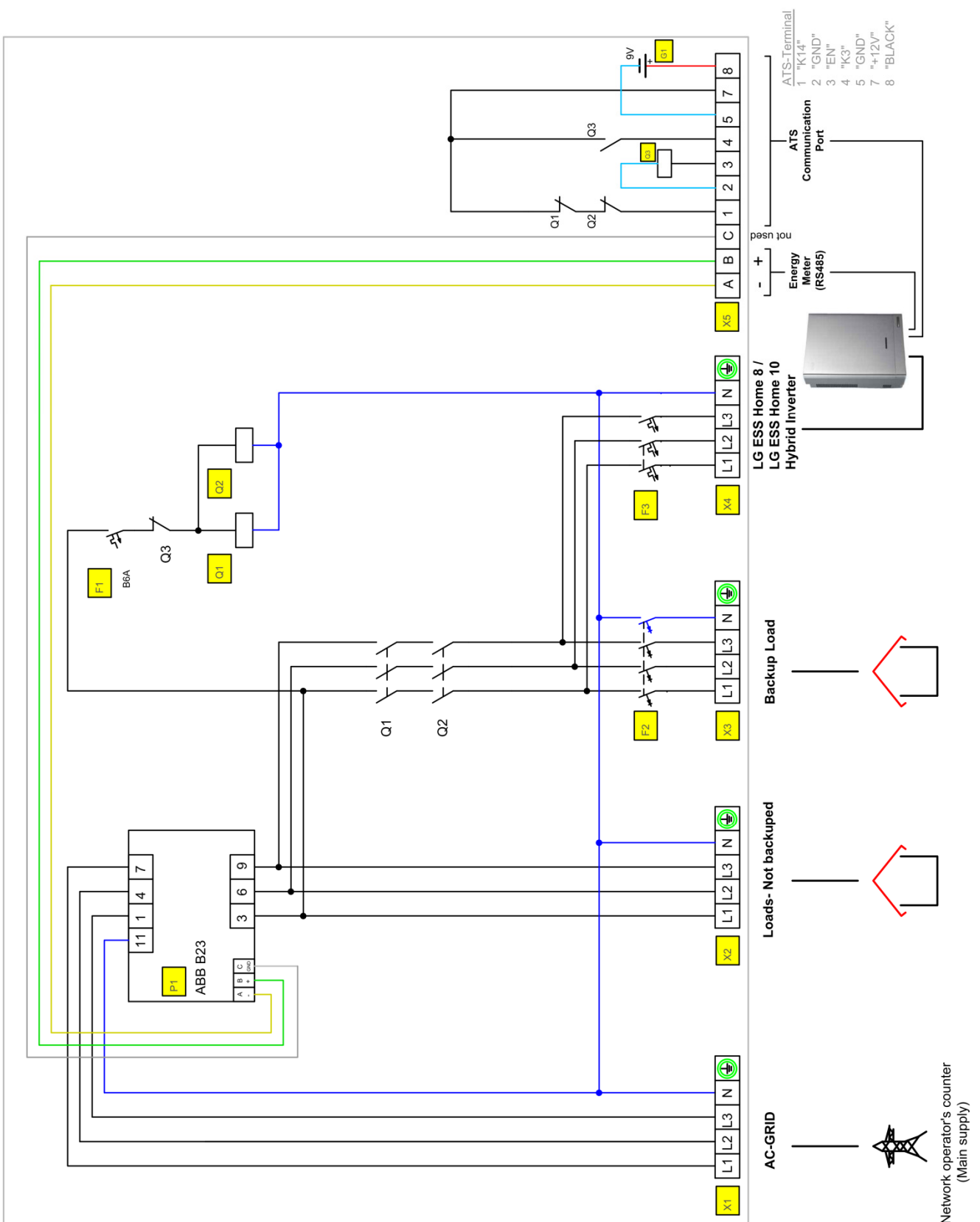
Position	Quantity	Designation
A	1	ATS-Box 10013679
B	3	Cable gland M40 x 1.5 (clamping range \varnothing 16 – 28mm)
C	3	Expansion from M32 to M40
D	3	Cable gland M32 x 1.5 (clamping range \varnothing 13 – 21mm)
E	1	Reduction from M20 to M12 (for pressure equalizing valve)
F	8	Cable gland M20 x 1.5 (clamping range \varnothing 6 – 13mm)
G	1	Pressure compensation element
H	3	Counter nut M32
I	9	Counter nut M20
J	1	"Dangerous voltage" warning label
K		Brief instructions for Bender VMD460
L	1	Sealing set "01968"
M	4	Cover caps for fastening screws
N	1	Lithium Manganese Dioxide 9V battery (in battery case)
O	1	Operating instructions for ABB Smart Meter
P	1	Sticker - Indicating an island operating storage system
Q	1	Manual Nr. 10013830 (= this manual)
R	1	Circuit diagram for the ATS-Box 10013679 (DIN A3 printout)

4. Circuit diagram

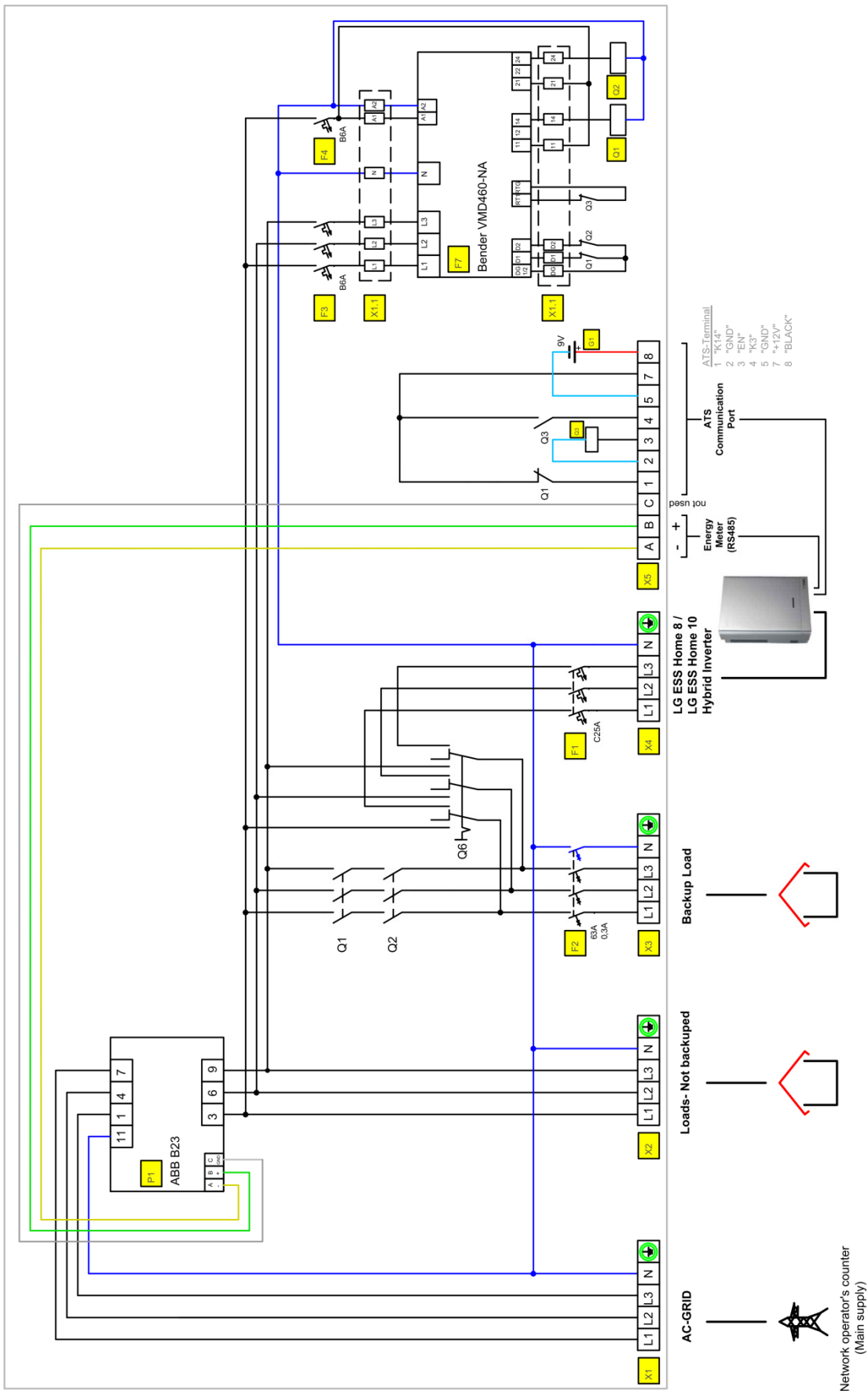
4.1 Type 10013677 -All-pole; standard



4.2 Type 10013678 -Triple-pole; Standard-



4.3 Type 10013679 -Triple-pole; including "NA"- protection Bender+source changeover switch-



5. Assembly of the Automatic switch Box

5.1 Requirements for the assembly location

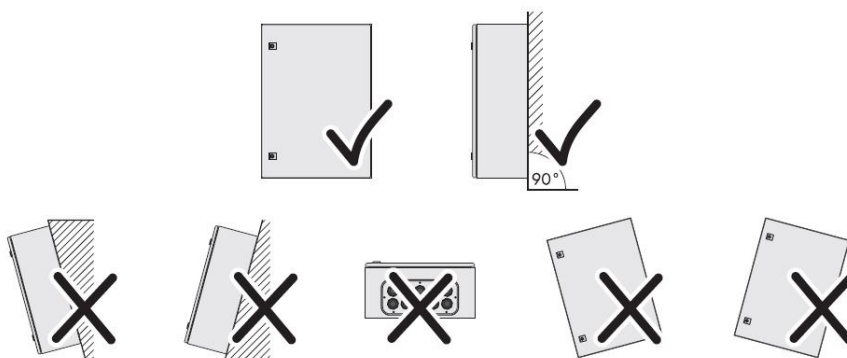
DANGER

Danger to life from fire and explosion

- Do not install the ATS-Box on flammable materials!
- Do not install the ATS-Box in areas where there are easily flammable materials!
- Do not install the ATS-Box in potentially explosive areas!

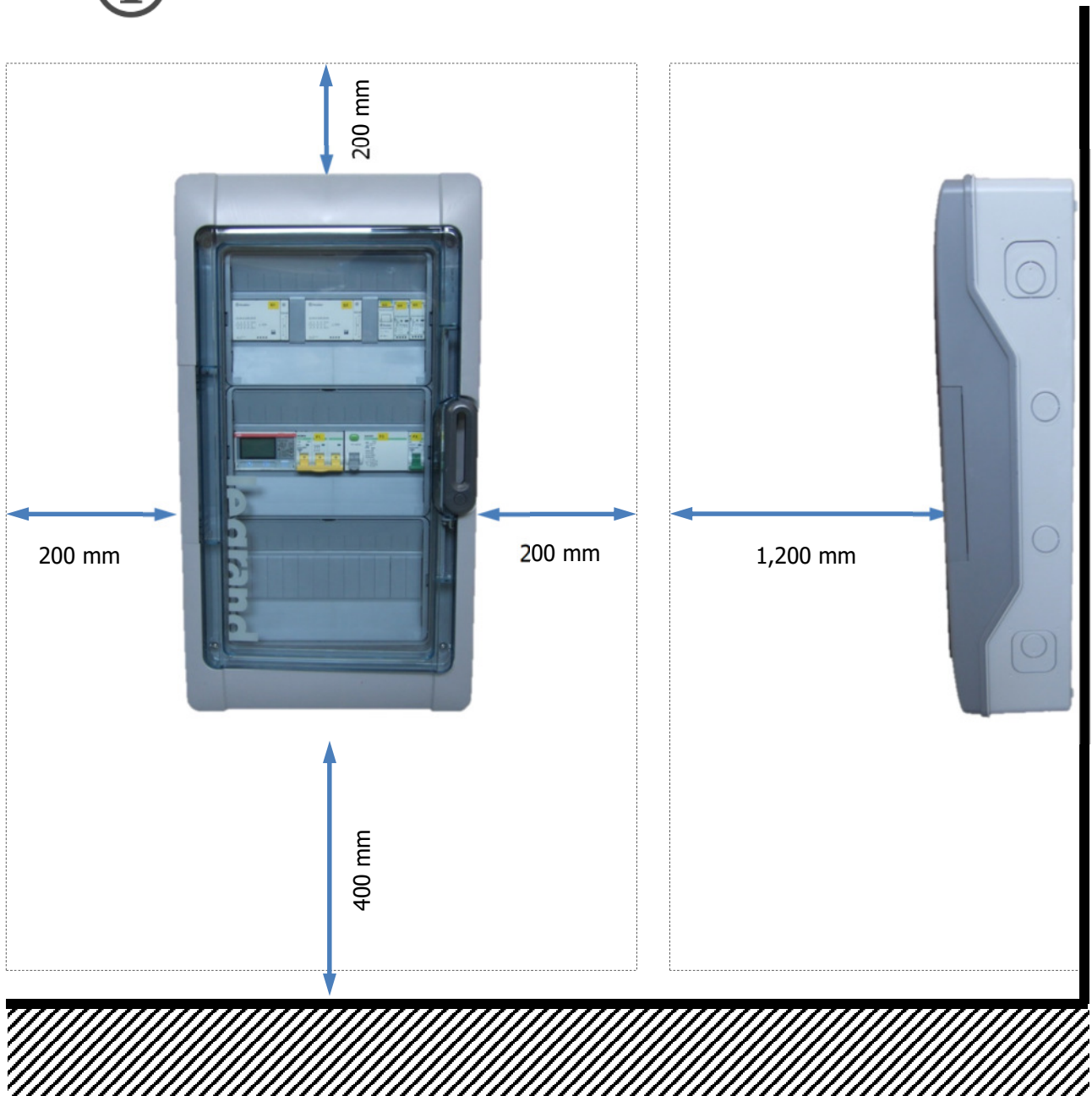
- The substrate consists of solid material
- The substrate is suitable for weight and dimensions
- The assembly site is always accessible
- Climatic conditions are met (see technical data)
- The installation location is not exposed to direct sunlight and no direct weather
- The installation location is protected against spray water
- Technical connection conditions of the grid operator are met

Installation position



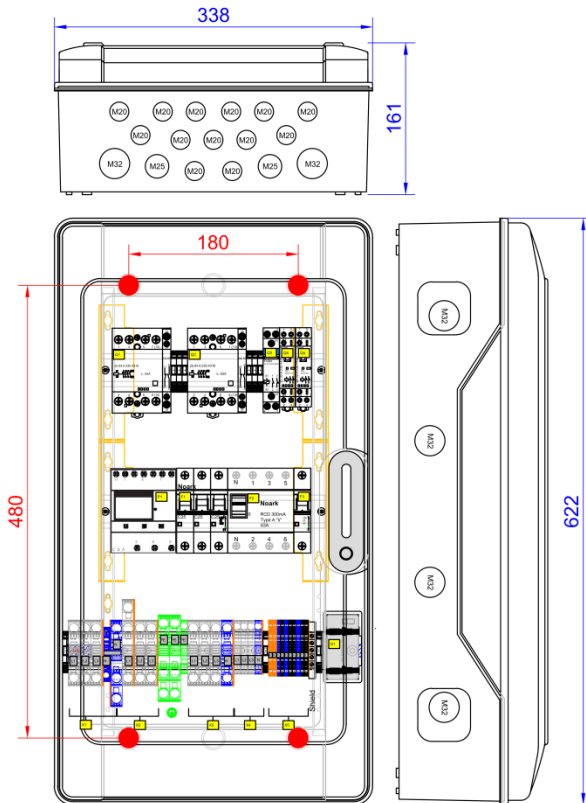
5.2 Minimum spacing

Minimum spacing applies to all versions of the Automatic transfer switch Box

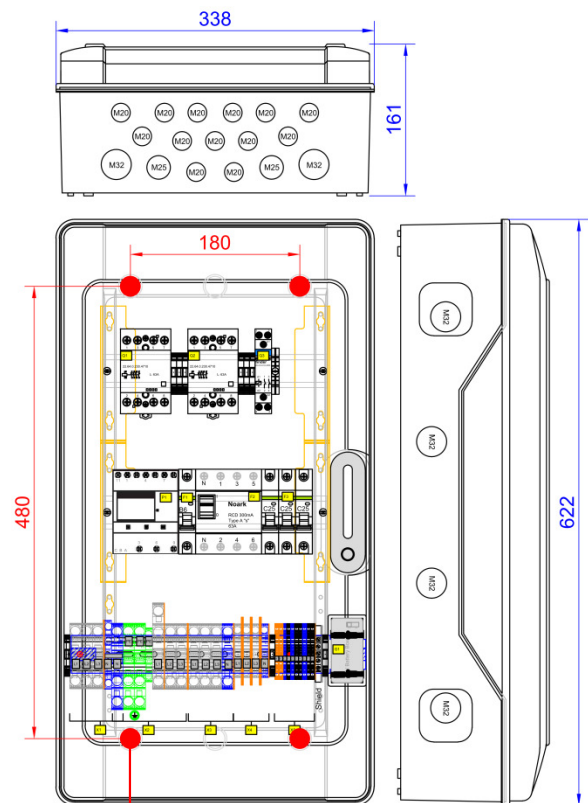


5.3 Dimensions and fastening

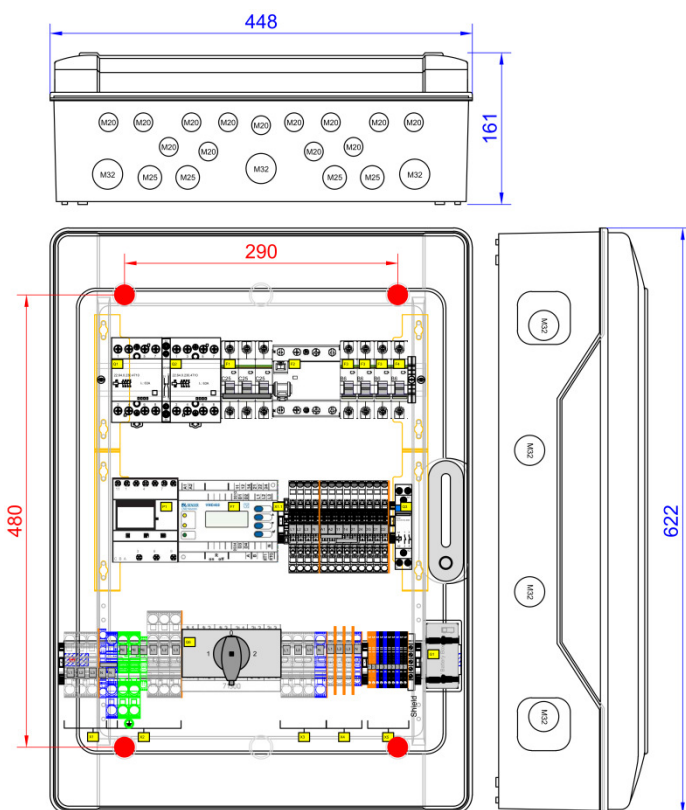
10013677



10013678



10013679



Housing opening for fastening:
4 x oblong hole \varnothing 5.5

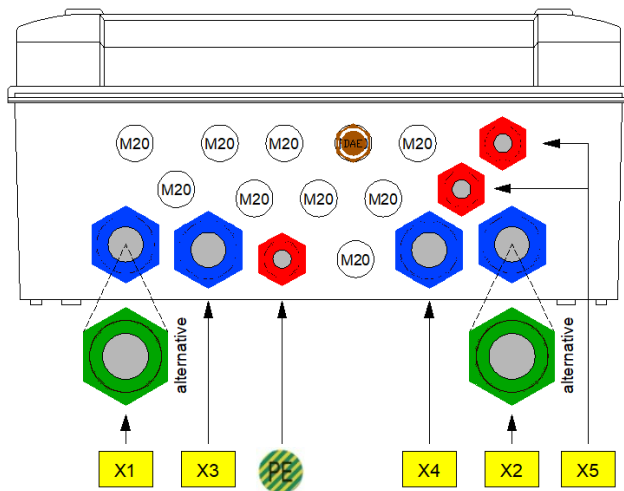


Depending on the subsurface, choose a suitable type of fastening, e.g. using 4 x expansion bolts S8 and 4 x particle boards/wood screw \varnothing 5.5

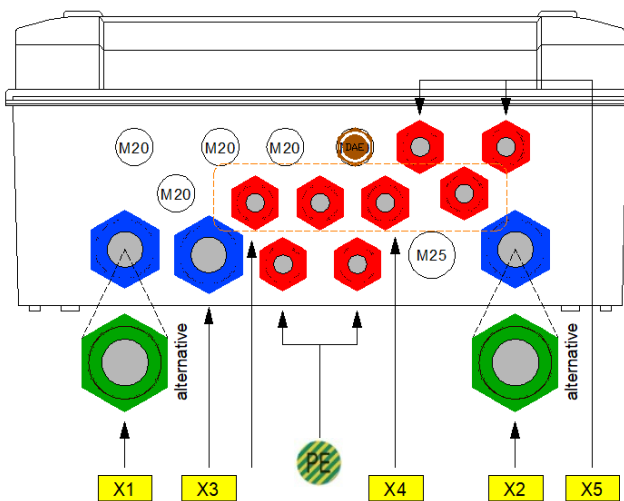
5.4 Cable entry and cable/wire types

i Use the embossing on the bottom side!

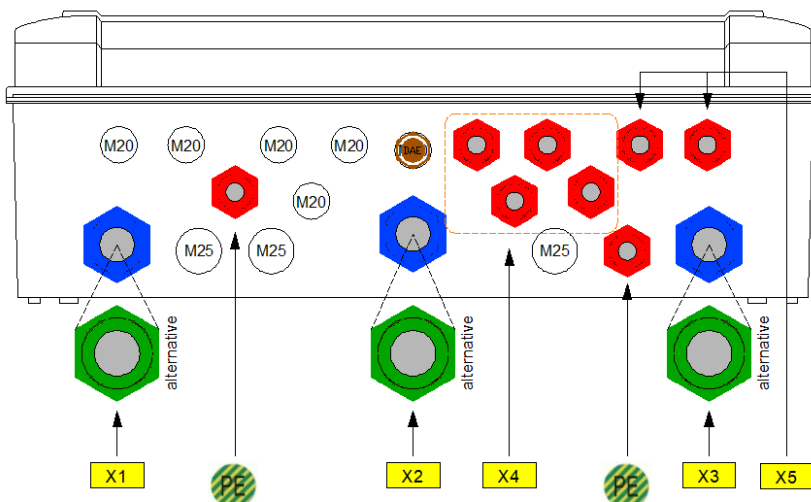
10013677



10013678



10013679



M40
Ø19-28mm



M32
Ø13-21mm





M20
Ø7-13mm




pressure
compensation
element

Terminal strip no.	Objective	e.g. wiring type	Comment
--------------------	-----------	------------------	---------

	TT-grid!	for the counter safeguarding	NYY-J 5x10 mm ² NYY-J 5x16 mm ²	max. pre-fuse 50 A max. pre-fuse 63 A
				
		"0" = without	NYY-0 4x10 mm ² NYY-0 4x16 mm ²	max. pre-fuse 50 A max. pre-fuse 63 A
		for the main grounding busbar (single-wire or multi-wire)	NYM 1x10 mm ² NYM 1x16 mm ²	max. pre-fuse 50 A max. pre-fuse 63 A

only by triple-pole disconnection for the LG ESS Home 8/10



(single-wire or multi-wire)

NYY-J	1x4/6 mm ²	selection of the cross-section similar to individual wires on X4!
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X2	"Standard" loads	NYY-J 5x10 mm ² NYY-J 5x16 mm ²	max. pre-fuse 50 A max. pre-fuse 63 A
----	-------------------------	--	--

X3	"Backup power" loads	NYY-J 5x10 mm ² NYY-J 5x16 mm ²	max. pre-fuse 50 A max. pre-fuse 63 A
----	-----------------------------	--	--

X4	All-pole disconnection LG ESS Home 8/10	NYY-J 5x4 mm ²	"short/medium distance"
		NYY-J 5x6 mm ²	"long distance"

Triple-pole disconnection LG ESS Home 8/10

4 x	NYY-0	1x4 mm ²	"short/medium distance"
4 x	NYY-0	1x6 mm ²	"long distance"

X5	LG ESS Home 8/10 ATS-Terminal  Energy Meter	Li2YCY 8x2x0.5 mm ²	either/or
		CAT6a 8x2xAWG21/1	
		Li2YCY 2x2x0.5 mm ²	either/or
		CAT6a 2x2xAWG21/1	



For triple-pole disconnection: The power cable to the LG ESS Home 8, LG ESS Home 10 must be installed to be short-circuit and ground fault protected. This requires the use of double-insulated single wires. The protective conductor connection of the LG ESS Home 8, LG ESS Home 10 is also to be installed as a single wire, e.g. NYY-J.

6. Clamping range

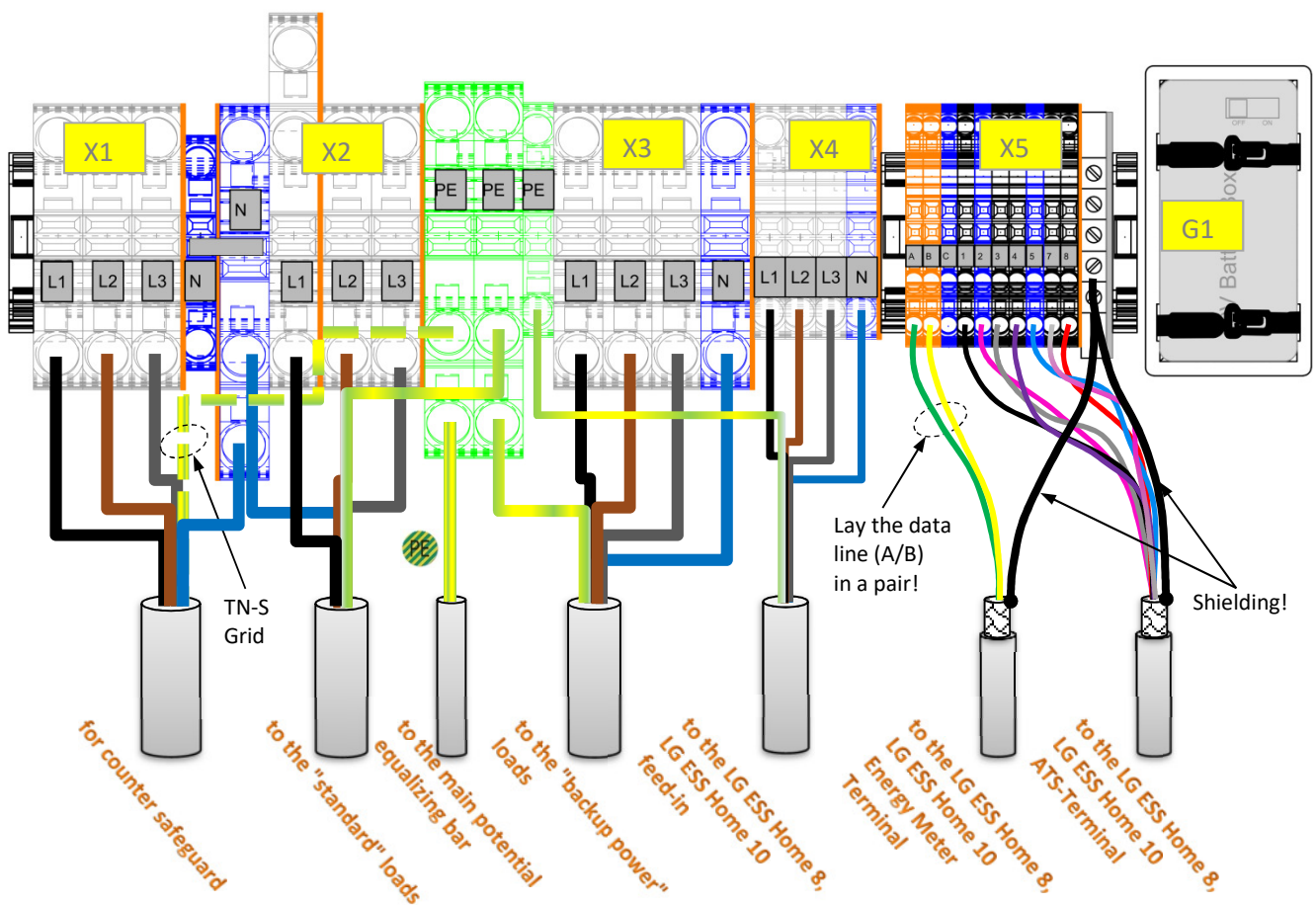
6.1 Connecting terminals

Only* spring-loaded terminals are installed! (WAGO Cage Clamp®)

(*Exception: X5 "shield" = screw terminal)

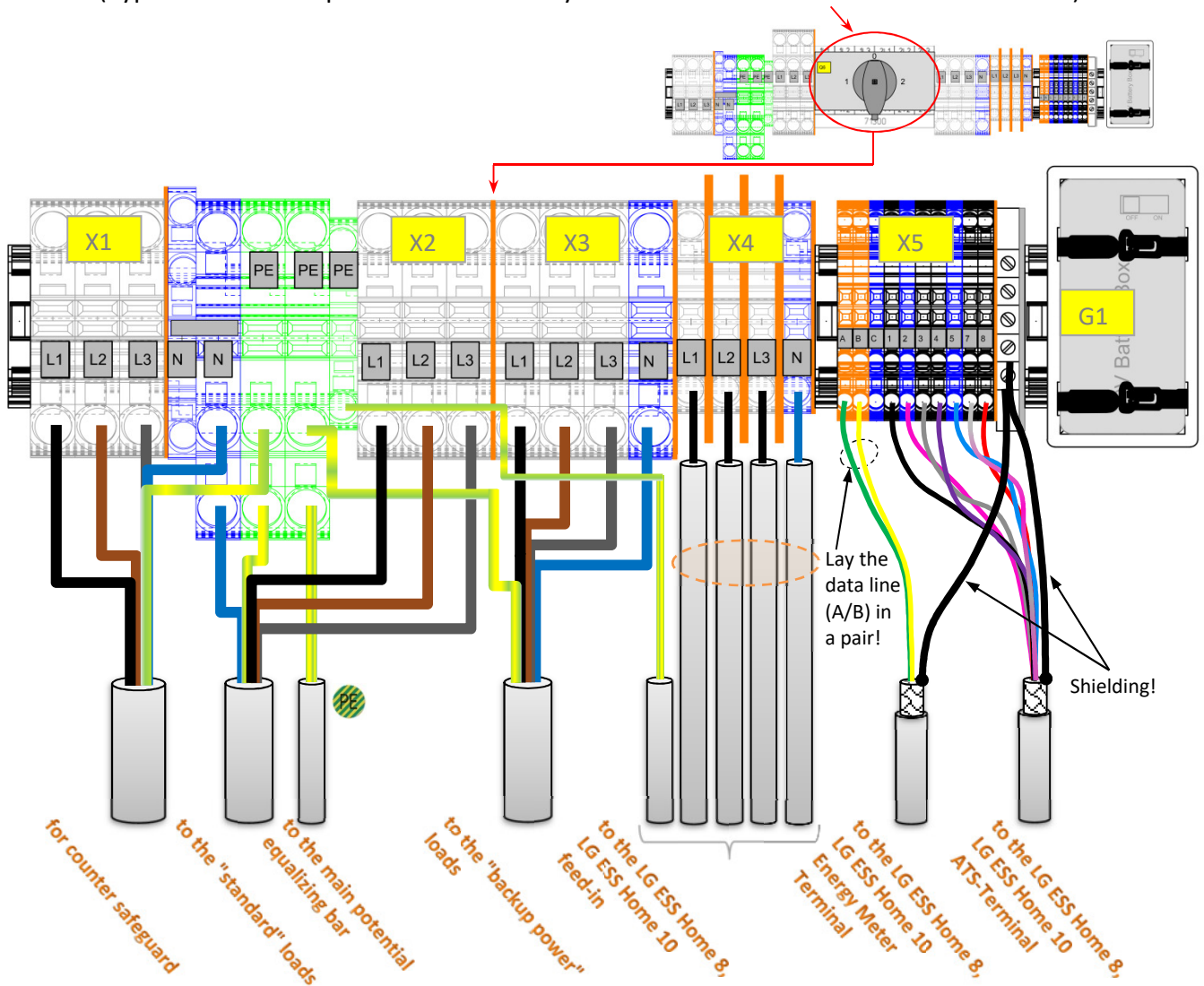
Terminal strip	Strands / wire type	Max. cross-section [mm ²]	Stripping length [mm]	Wire end sleeve
X1/X2/X3	single-wire	16	18-20	✘
	fine wire	25	18-20	✘
	fine wire	16	18-20	✓
X4	single-wire	10	13-15	✘
	fine wire	10	13-15	✘
	fine wire	6	13-15	✓
X5	single-wire	(from 0.25) - 2.5	9-11	✘
	fine wire	(from 0.25) - 2.5	9-11	✘
	fine wire	(from 0.25) - 1.5	9-11	✓
X5 "shield" (shield clamp)	single-wire	(from 0.5) - 4	9	
	fine wire	(from 0.5) - 4	9	

All-pole disconnection - Type 10013677



Triple-pole disconnection - Type 10013678

(Type 10013679 is quite similar. The only difference: There's Q6 between X2 and X3)



Short-circuit and ground fault-protected installation up to the terminals (dual-insulated single wires/lines)

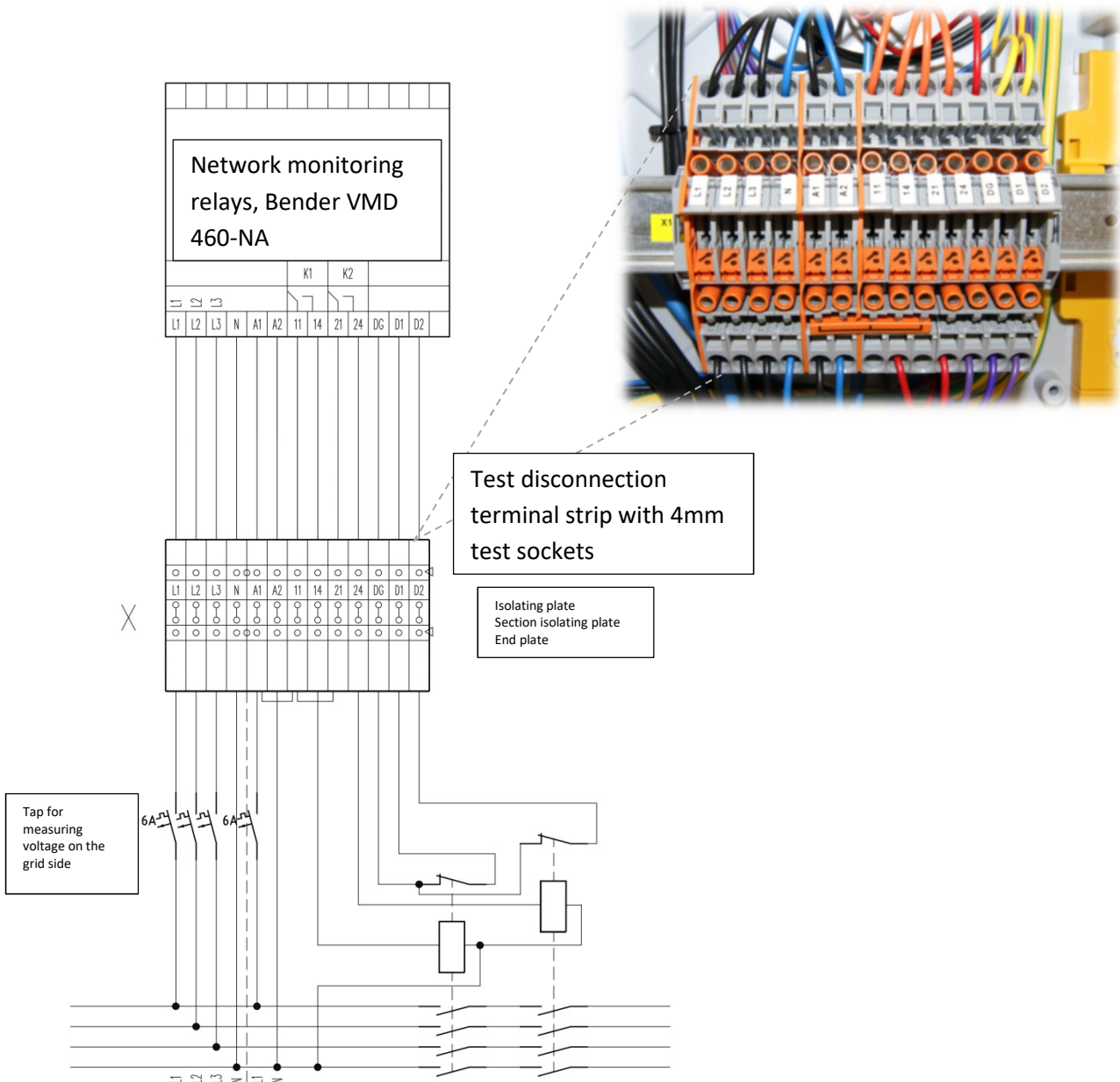
- strip as "short" as possible
- Before the terminal, check the individual wires to determine whether there is a minimum air gap of 6 mm+ (bare conductor!)
 - between the conductors and the conductors to the ground and whether the minimum
 - creepage distance of 8 mm* (insulation!) is met

[†] n EN 60664-1 (for reinforced insulation, overvoltage category III; rated impulse voltage 4 kV; degree of pollution II; condition A - inhomogeneous field)

* n. EN 60664-1 (for 2 x basic insulation = double insulation; insulation group III; degree of pollution II)

6.2 Test disconnection terminal strip (only with Bender VMD460)

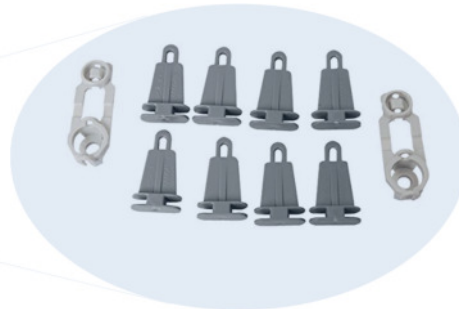
The test disconnection terminal strip has been initially designed to comply with the requirements of the Austrian power supply company "Netz Oberösterreich" (NETZ OÖ). The longitudinally switchable disconnect terminals are equipped with contact-proof test sockets for \varnothing 4mm test plugs.



Source: Netz Oberösterreich

6.2.1 Sealing possibility for access to the test disconnection terminal strip

The scope of delivery of the ATS-Box 10013679 (with an additional "NA"- protection / "ENS") contains a sealing set. Thus the housing cover can be sealed as a whole (sealing of the fastening screws) as well as individually (covering of the partial units) according to the specifications of the distribution network operators. Please observe the enclosed installation instructions here!



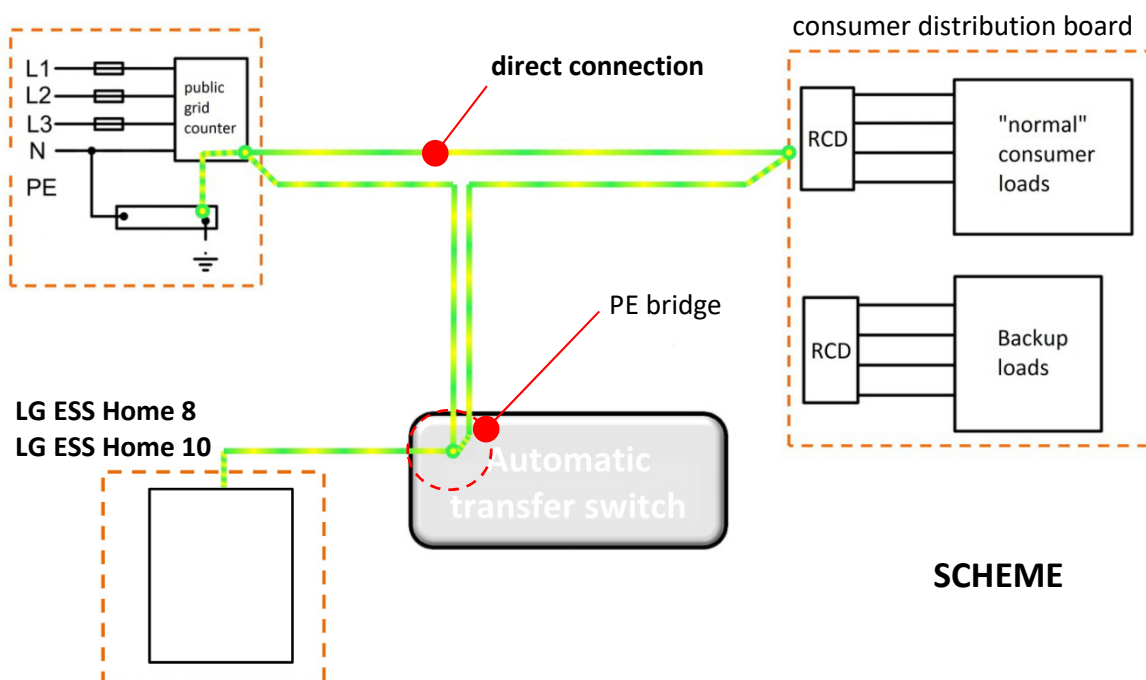
7. Connection of the protective conductor (PE)

The ATS-Box itself corresponds to the protection class II. The "PE" terminals in the connection area are not used for the protective grounding of the housing of the ATS Box!



The local potential equalization (main grounding busbar) must be connected to the PE terminal block of the ATS-Box!

It is recommended to maintain a **direct connection** from the main grounding busbar to the already existing consumer distribution board or to create this connection for a new installation. The PE bridge in the ATS-Box could accidentally be opened in the event of an uninstallation or conversion measure. This would result in the loss of the PE in the consumer distribution board and the protective measure against electric shock would be overridden!



SCHEME

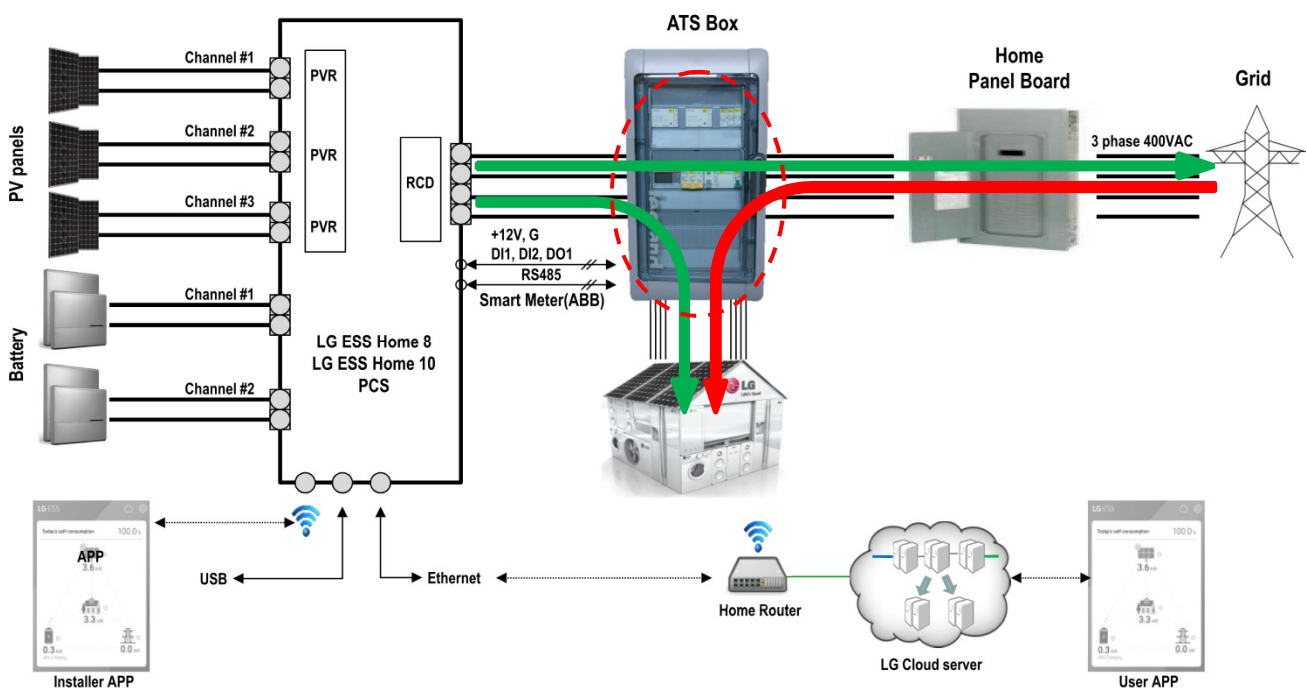
8. Nominal thermal power - passing through power

The nominal thermal power (rated power) and the maximum permissible ambient temperature are decisive for the maximum heating of the components within the ATS-Box. To prevent unwanted tripping of line circuit breakers (MCBs) and residual current operated circuit breakers (RCCBs), these two parameters must remain within the permissible limits.

ATS-Box **63A** (= grid connection value max. 63 A fuse)

- Maximum permissible ambient temperature: 40°C
- Maximum permissible "passing through" power: 20KW

$$P_{\text{passing through max.}} = \sum (+P_{\text{consumption max.}}) + (-P_{\text{feed-in max.}})$$



In the grid mode, a power consumption of the consumers connected to the public grid is "passed" through the ATS Box. On the other hand, an excess of energy can again be fed back into the grid. The mathematical sum of both powers is called the "passing through power". The mean (average expected) throughput is also referred to as "thermal throughput." A current peak performance of the consumer / PV system can and may be higher!

9. Commissioning of the Automatic transfer switch

9.1 ATS-Box - Version 10013679 (Bender VMD460)

The device is not pre-configured!

- The original Bender short manual is included in the scope of supply of the ATS-Box.
- See the original documentation from the manufacturer Bender at www.bender-de.com. You can always find the latest technical documentation in the download area here:
 - Manual
 - Quick start guide
 - Proof of conformity
- Parameterize the grid- and system protection - VMD460 - according to the specifications of your grid operator



IMPORTANT

Also see the brief instructions and manual from Bender!

The Bender VMD 460 requires an "N/C" setting for the function of the remote trip (remote trip occurs via the NC contact of contactor K3 - see circuit diagram). The factory setting here, however, is "off." Therefore always parameterize to "N/C!"



1. Alarm/measured values
2. History
3. Settings
4. System
5. Info



This ATS-Box includes also a manual changeover of the **backup powered loads**

➤ Switch position "1"

Normal operation (set it this way!)

- ◆ Grid parallel operation with existing grid
- ◆ Automatic backup power operation via LG ESS Home 8, LG ESS Home 10



➤ Switch setting "0"

Backup powered loads disconnected

- ◆ All-pole or triple-pole, depending on the version of the ATS-Box
- ◆ Disconnection both from the network, as well as from the LG ESS Home 8, LG ESS Home 10

➤ Switch position "2"

- ◆ The supply of the backup powered loads from the LG ESS Home 8, LG ESS Home 10 is circumvented with a bypass*.
Now, the backup loads are switched in parallel to the "normal" loads.

*If your grid operator were to switch to a power supply through an emergency power unit due to a damage / repair / conversion measure, the additionally installed "NA"- protection / "ENS" might not accept this network quality under certain conditions. Due to the bypass operation, your backup power loads can then be supplied by the network operator's unit. You can do this if a sufficient supply of the backup power loads is no longer guaranteed by the direct solar and / or battery operation of the LG ESS Home 8, LG ESS Home 10.

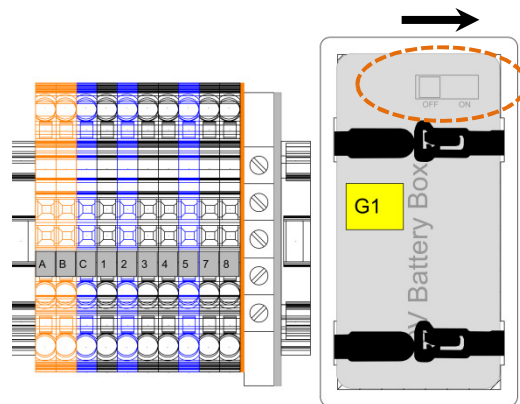
9.2 General

Previous conditions

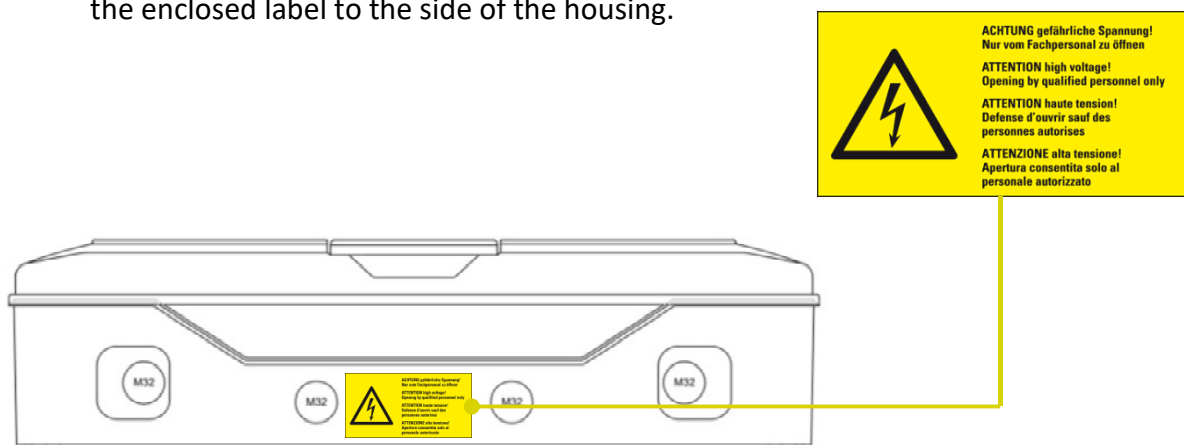
- The Automatic transfer switch Box is permanently mounted
- All required lines are correctly mounted and connected
- PE to the main grounding busbar is connected
- All required insulation and functional checks have been carried out
- Only version with Bender VMD460: The network- and system protection("NA"/"ENS) is configured to comply with the requirements of the network operator

Procedure

- Carry out the required procedure according to LG's ESS Home 8 and ESS Home 10 system documentation.
- Slide the battery switch for the LG's ESS Home 8 and ESS Home 10 "Black Start" to the "ON" position



- After successful commissioning and screwing on the housing cover, please attach the enclosed label to the side of the housing.



10. Shut down the Automatic transfer switch Box to be voltage-free

WARNING

1) **Switch the input of the terminal strip X4 to be voltage-free (feed-in of the LG ESS Home 8, LG ESS Home 10)**

Decommission the LG ESS Home 8, LG ESS Home 10 Inverter (see LG's system documentation for this purpose!), determine the freedom from voltage and secure against restarting!

2) **Switch the input of the terminal strip X1 to be voltage-free (public grid)**

Secure the fuse elements between the public grid and the ATS-Box, determine the freedom from voltage and secure against restarting!



The terminal strip X5 is only supplied with a SELV voltage (protective low voltage 12V with safe disconnection = **Safety Extra Low Voltage**)!

11. Maintenance and cleaning

You should regularly check the Automatic transfer switch Box for function and safety. Please refer to the national guidelines here, which vary by country. In Germany, for example, according to BGV [Professional Association Guidelines] A3 §5, electrical systems and fixed electrical equipment in "operating sites, rooms and plants of a special kind" (DIN VDE 0100-712 for PV-systems) must be inspected by a qualified electrician ONCE per year!

The installed ground fault circuit interrupters (RCCBs) are to be checked by the system operator every 6 months.

The supplied 9V battery (Black Start) should be sufficient for approximately ten years of operation. The battery replacement is easy to do: Loosen the two cable ties (push the latches) and then you can see the screw on the back side of the battery case; loosen this screw and replace the battery.

Visual check

Depending on the installation site and the ambient conditions, there is a greater or lesser degree of external contamination. Clean carefully here with a damp cleaning cloth! Never open the housing for this purpose and only clean with the lid closed!

12. Storage

Requirements for the storage location:

- Location is dry
- The ambient temperature is between -25°C and +55°C
- When stored up to max. 24 hours, the ambient temperature may be a max. +70°C!

13. Disposal

Dispose of the Automatic transfer switch Box according to the applicable disposal regulations for electronic waste!

Class 9 lithium battery hazard label is used according UN 3091:



With regard to disposal:

European "ADR" - SV 670

14. Technical data

<u>Additional documents to be applied</u>	<u>Versions</u>
<input checked="" type="checkbox"/> Installation manual of LG ESS Home 8, LG ESS Home 10	ALL
<input checked="" type="checkbox"/> Owner's manual of LG ESS Home 8, LG ESS Home 10	ALL
<input checked="" type="checkbox"/> Operating instructions of the ABB Smart Meter	ALL
<input checked="" type="checkbox"/> Manual and brief instructions of Bender "LINETRAXX VMD 460-NA"	10013679

Please always keep up-to-date with the latest editions of the manufacturers!

<https://www.lg.com/global/business/ess/residential/dc-8-10>

https://www.bender.de/en/products/measuring-and-monitoring-relays/linetraxx_vmd460-na

14.1 ATS-Box 10013677 All-pole disconnection

Rated voltage [V AC]	230/400
Rated frequency [Hz]	50/60
Permissible battery inverter	LG ESS Home 8, LG ESS Home 10
Permissible network configuration	TN-C-S/TN-S/TT
Max. prospective* short circuit current [kA]	10 (without Smart Meter)
Max. grid-side pre-fuse [A]	63
Max. thermal power (3AC) P _{RATED} [kW]	20
Losses in the standby mode [W]	approx. 14
Connecting terminals of the grid/loads/backup power loads	Spring loaded; force up to 16mm ²
Connecting terminals Symo Hybrid	Spring loaded; force up to 6mm ²
Additional operating losses 25/50/100% of P _{RATED} [W]	approx. 2/4/13
Operating temperature range [°C]	-5°C... +40
Relative air humidity [%]	5... 95
Class rating (EN 61140)	II
IP protection type (EN 60529)	65
Fastening type	Wall mounting
Dimensions WxHxD [mm]	338 x 622 x 161
Weight [Kg]	approx. 11
Product standard	IEC/EN61439-1 (DE: VDE 0660-600-1) "Low-voltage switching device combinations" IEC/EN61439-2 (DE: VDE 0660-600-2) "Energy switching device combinations"

14.2 ATS-Box 10013678 Triple-pole disconnection

Rated voltage [V AC]	230/400
Rated frequency [Hz]	50/60
Permissible battery inverter	LG ESS Home 8, LG ESS Home 10
Permissible network configuration	TN-C-S/TN-S
Max. prospective* short circuit current [kA]	10 (without Smart Meter)
Max. grid-side pre-fuse [A]	63
Max. thermal power (3AC) P _{RATED} [kW]	20
Losses in the standby mode [W]	approx. 10
Connecting terminals of the grid/loads/emergency power loads	Spring loaded; force up to 16 mm ²
Connecting terminals Symo Hybrid	Spring loaded; force up to 6mm ²
Additional operating losses 25/50/100% of P _{RATED} [W]	approx. 2/4/13
Operating temperature range [°C]	-5°C... +40
Relative air humidity [%]	5... 95
Class rating (EN 61140)	II
IP protection type (EN 60529)	65
Fastening type	Wall mounting
Dimensions WxHxD [mm]	338 x 622 x 161
Weight [Kg]	approx. 11
Product standard	IEC/EN61439-1 (DE: VDE 0660-600-1) "Low-voltage switching device combinations" IEC/EN61439-2 (DE: VDE 0660-600-2) "Energy switching device combinations"

14.3 ATS-Box 10013679 Triple-pole disconnection (+ "NA"/"ENS"+ QU)

Rated voltage [V AC]	230/400
Rated frequency [Hz]	50/60
Permissible battery inverter	LG ESS Home 8, LG ESS Home 10
Permissible network configuration	TN-C-S/TN-S
"NA"- protection integrated (no pre-parameterization!)	Type Bender VMD460-NA
Test disconnection terminal strip	yes, with test sockets $\varnothing 4$ mm
Manual source changeover switch (grid/0/emergency power)	for emergency power circuits (max. 63 A)
Max. prospective* short circuit current [kA]	10 (without Smart Meter)
Max. grid-side pre-fuse [A]	63
Max. thermal power (3AC) P_{RATED} [kW]	20
Losses in the standby mode [W]	approx. 13.5
Connecting terminals of the grid/loads/emergency power loads	Spring loaded; force up to 16 mm ²
Connecting terminals Symo Hybrid	Spring loaded; force up to 6mm ²
Additional operating losses 25/50/100% of P_{RATED} [W]	approx. 2/4/13
Operating temperature range [°C]	-5°C... +40
Relative air humidity [%]	5... 95
Class rating (EN 61140)	II
IP protection type (EN 60529)	65
Fastening type	Wall mounting
Dimensions WxHxD [mm]	448 x 622 x 161
Weight [Kg]	approx. 12.5
Product standard	IEC/EN61439-1 (DE: VDE 0660-600-1) "Low-voltage switching device combinations" IEC/EN61439-2 (DE: VDE 0660-600-2) "Energy switching device combinations"

* is the max. uninterrupted permanent short-circuit current of the grid connection

15. Disclaimer

All warranty, liability and compensation claims for damage of any kind are excluded if they are attributable to one or more of the following causes:

- Transport damage
- Improper use of the product
- Operation of the product in an unsuitable environment
- Operation of the product while ignoring the relevant statutory safety provisions at the site of use
- Ignoring the warning and safety instructions in all of the documents relevant for the product
- Operation of the product using faulty safety and protection conditions
- Unauthorized modification or repair of the product
- Malfunction of the product due to the effect of connected or neighboring devices outside of the legally permitted limit values
- Catastrophes and force majeure

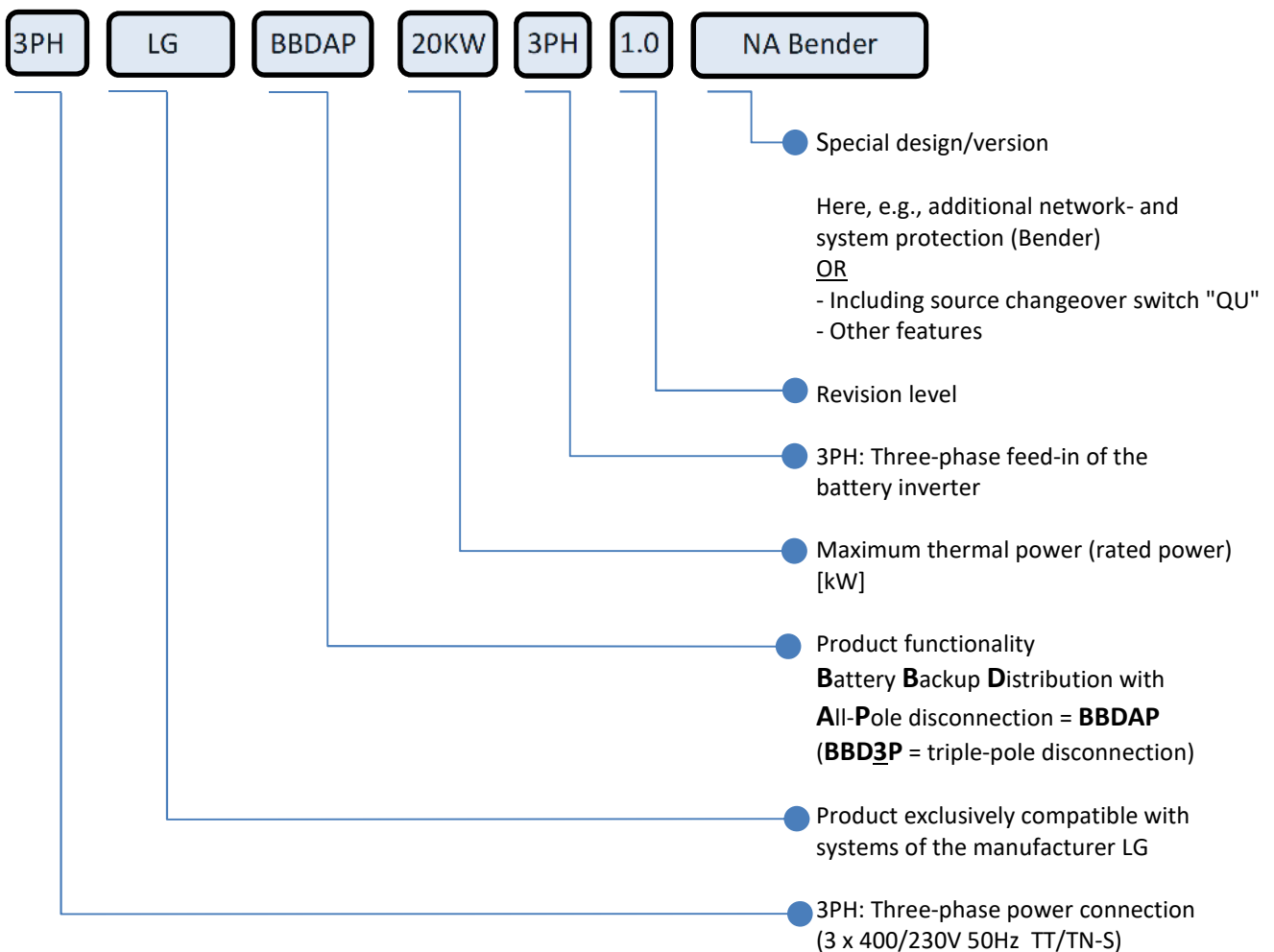
16. EC declaration of conformity

EC Declaration of Conformity

The products with type designation (enwitec electronic - match code)

Manufacturer
manufacturer enwitec electronic GmbH & Co. KG
 Scherrwies 2
 84329 Rogglfing -Germany-

Description **Automatic transfer switch Box/Battery backup distribution for the LG Energy Storage System "LG ESS Home 8, LG ESS Home 10"**



to which this declaration relates is in conformity to the following standard(s) or normative document(s):

Standard **IEC/EN 61439-1**
 IEC/EN 61439-2

and is in accordance with the provisions of the following EC-directive(s):

Low voltage directive (LVD) 2014/35/EU
Restriction of Hazardous Substances Directive (RoHS) 2011/65/EU

Year of affixing CE-marking: **2019**

Date of issue: **February 06, 2019**
Date of issue

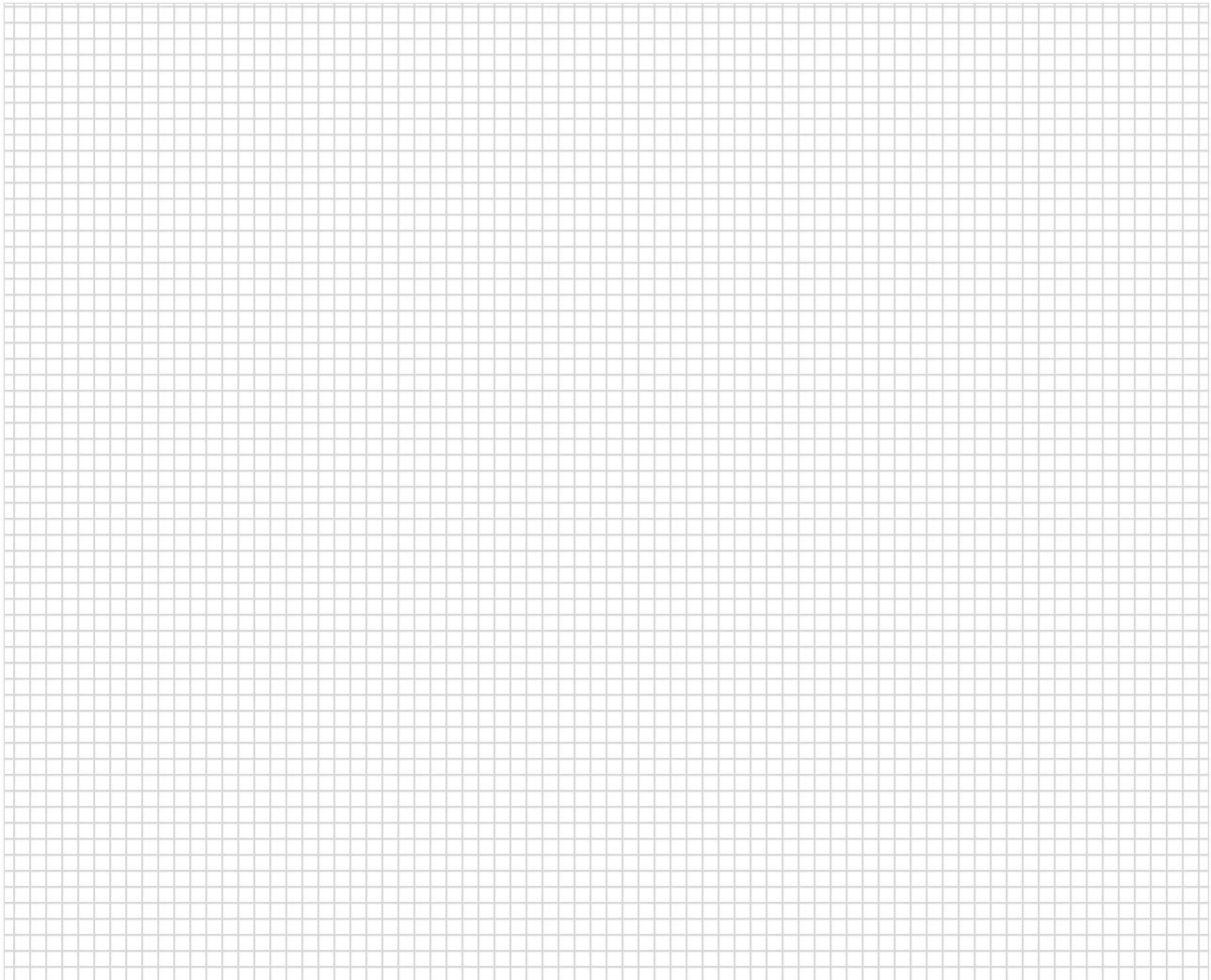
enwitec electronic GmbH & Co. KG

A handwritten signature in black ink, appearing to read "Johann Wimmer", with a long horizontal flourish extending to the right.

NAME/SIGNATURE
Signature

Johann Wimmer
managing director (CEO)

Sketch/notes



Our products



PV connection technology

Generator connection boxes, AC/DC distribution units, protective circuitry, monitoring, grid and system protection



Energy storage solutions

Island and emergency backup systems, battery protection, automatic transfer switches



Contract manufacturing

Electrical assemblies, switch cabinet construction, processing of casings, cable manufacture, assembly of complex components for power storage solutions



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